CLAIMS:

1. A method of separating a blood clotting protein from a mixture of blood clotting protein and at least one contaminant, the method comprising:

(a) placing a blood clotting protein and contaminant mixture in a first solvent stream, the first solvent stream being separated from a second solvent stream by a first electrophoretic membrane;

(b) selecting a buffer for the first solvent stream being a pH greater than the isoelectric point of the blood clotting protein ;

(c) applying an electric potential between the first and second solvent streams causing movement of at least some of the contaminants through the membrane into the second solvent stream while the blood clotting protein is substantially retained in the first solvent stream, or if entering the membrane, being substantially prevented from entering the second solvent stream;

(d) optionally periodically stopping and reversing the electric potential to cause movement of any blood clotting protein having entered the membrane to move back into the first solvent stream, wherein substantially not causing any contaminants that have entered the second solvent stream to re-enter first solvent stream; and

(e) maintaining step (c) until the first solvent stream contains the desired purity of blood clotting protein substantially mimicking the characteristics of natural blood clotting protein.

2. The method according to claim 1 further including the steps of:

(f) replacing the first electrophoretic membrane with a second electrophoretic membrane having a molecular mass cut-off greater that of the first membrane;

(g) applying an electric potential between the first and second solvent streams causing movement of at least some of the contaminants through the second membrane into the second solvent stream while the blood clotting protein is substantially retained in the first solvent stream, or if entering the second membrane, being substantially prevented from entering the second solvent stream;

(h) optionally periodically stopping and reversing the electric potential to cause movement of any blood clotting protein having entered the second membrane to move back into the first solvent stream, wherein substantially not causing any contaminants that have entered the second solvent stream to re-enter first solvent stream; and

(i) maintaining step (g) until the first solvent stream contains the desired purity of blood clotting protein substantially mimicking the characteristics of natural blood clotting protein.

3. The method according to claim 1 or 2 wherein the mixture is plasma obtained from human blood and the blood clotting protein is fibrinogen.

4. The method according to any one of claims 1 to 3 wherein the first electrophoretic membrane has a molecular mass cut-off close to the apparent molecular mass of the blood clotting protein , and the second electrophoretic membrane has a molecular mass cut-off greater than the first electrophoretic membrane.

5. The method according to claim 4 wherein the first electrophoretic membrane has a molecular mass cut-off of 300 kDa and the second electrophoretic membrane has a molecular mass cut-off of 1000 kDa.

6. The method according to any one of claims 1 to 5 wherein the solvent streams have a pH of 7.0.

7. The method according to any one of claims 3 to 6 wherein recovery of fibrinogen from blood plasma is at least 70% and the fibrinogen having at least 95% clottability.

8. Isolated fibrinogen substantially mimicking the characteristics of natural fibrinogen purified by the method according to any one of claims 3 to 7.

9. Isolated fibrinogen substantially having the clotting and functional characteristics of native fibrinogen.

10. Use of isolated fibrinogen according to claim 8 or 9 in medical and veterinary applications.

11. The use according to claim 10 selected from the group consisting of fibrin glue, isolating and characterising fibrinogen in dysfibrinogenaemias, inclusion in vascular grafts, and in wound healing aids.

12. A method of separating blood clotting protein from a mixture including blood clotting protein and at least one contaminant, the blood clotting protein and the at least one contaminant each having a respective size and a respective charge, the method comprising the steps of:

exposing the mixture to an electric field in the presence of an electrophoretic membrane having a defined pore size to thereby separate at least a portion of the blood clotting protein and the at least one contaminant onto opposite sides of the membrane in accordance with differences in at least one of the size and charge between the blood clotting protein and the at least one contaminant;

maintaining the exposing step for a period not greater than 48 hours; and

recovering from the mixture not less than 40% of the blood clotting protein content of the mixture.

13. A method of separating a blood clotting protein from a mixture including blood clotting protein and at least one contaminant, the blood clotting protein and the at least one contaminant each having a respective size and a respective charge, the method comprising the steps of:

exposing the mixture to an electric field in the presence of an electrophoretic membrane having a defined pore size to thereby separate at least a portion of the blood clotting protein and the at least one contaminant onto opposite sides of the membrane in accordance with differences in at least one of the size and charge between the blood clotting protein and the at least one contaminant;

maintaining the exposing step for a period not greater than 48 hours; and

recovering from the mixture a blood clotting protein, wherein in a clotting test the blood clotting protein produces fibrins in a clot having a mass to length ratio similar to that obtained with plasma in the same clotting test.

14. A method of separating blood clotting protein from a mixture including blood clotting protein and at least one contaminant, the blood clotting protein and the at least one contaminant each having a respective size and a respective charge, the method comprising the steps of:

exposing the mixture to an electric field in the presence of an electrophoretic membrane having a defined pore size to thereby separate at least a portion of the blood clotting protein and the at least one contaminant onto opposite sides of the membrane in accordance with differences in at least one of the size and charge between the blood clotting protein and the at least one contaminant;

maintaining the exposing step for a period not greater than 48 hours; and

recovering from the mixture a blood clotting protein, wherein in a clotting test the blood clotting protein produces a clot having fibrin network compaction similar to that obtained with plasma in the same clotting test.

15. A method of separating blood clotting protein from a mixture including blood clotting protein and at least one contaminant, the blood clotting protein and the at least one contaminant each having a respective size and a respective charge, the method comprising the steps of:

exposing the mixture to an electric field in the presence of an electrophoretic membrane having a defined pore size to thereby separate at least a portion of the blood clotting protein and the at least one contaminant onto opposite sides of the membrane in accordance with differences in at least one of the size and charge between the blood clotting protein and the at least one contaminant;

maintaining the exposing step for a period not greater than 48 hours; and

recovering from the mixture a blood clotting protein having a purity of not less than 90%.